Marigold Elementary School

Enhanced Learning Grant

1 with Nature:

Integrating Numeracy and Learning Outdoors

Our Goals

Marigold Elementary 2015/2016 School Goals:

- Social Responsibility:
  To increase social responsibility with the environment through Outdoor Education
- Numeracy:
  To increase number sense in a meaningful context

Personal Teaching Goals:

Our common goal is having our students learn outside of the classroom and understand that learning can happen anywhere.

Our Question

How can a place based approach to mathematics enhance student engagement and success in math?

What is place based education?

"It is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science and other subjects across the curriculum."

– Lane–Zucker and Sobel

Why place based education?

“Contact with nature is essential for child development and the nurturing of happy and healthy adults.”

CPC– Connecting Canadians to Nature

Why place based education?

- More physically active, improved motor coordination, balance and agility.
- Enhanced creativity, enthusiasm, self-motivation, and self-confidence.
- Improved academic performance
- Increased critical thinking skills, problem solving abilities.

Our Focus

How to develop/ construct/ apply mathematical understanding through inquiry and problem solving related to our real life gardening project

Big Idea

Analyzing data and chance will help us compare and interpret: concrete items can be presented in a graph

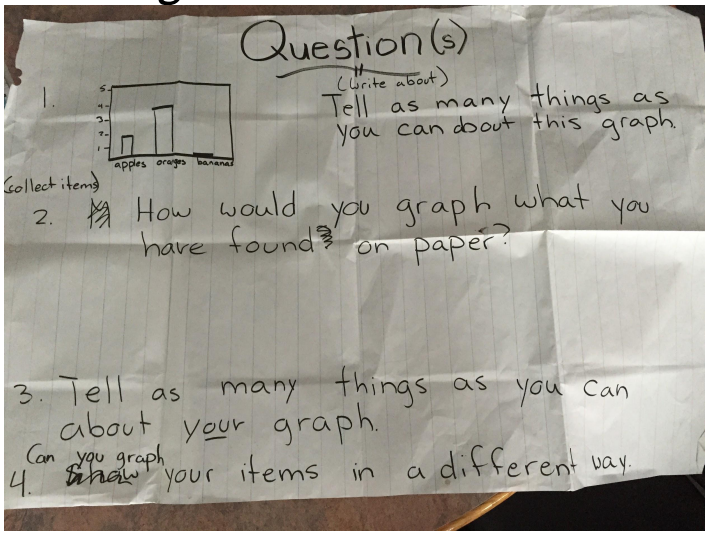
- *graphing*
- *measurement (cm, m, ml, L, g, kg)*
- *perimetre*
- *area*
- *problem solving*
- *number sense*

Curricular Competencies

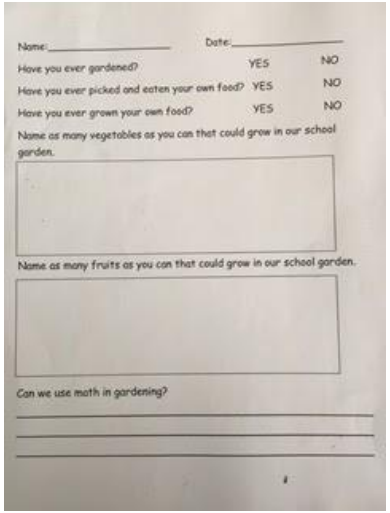
Engage in problem solving experiences that are connected to place, story, and cultural practices relevant to the local community.

Baseline Assessment

1. Four questions identifying prior knowledge.



2. Survey of experience gardening and perceived connection to math.

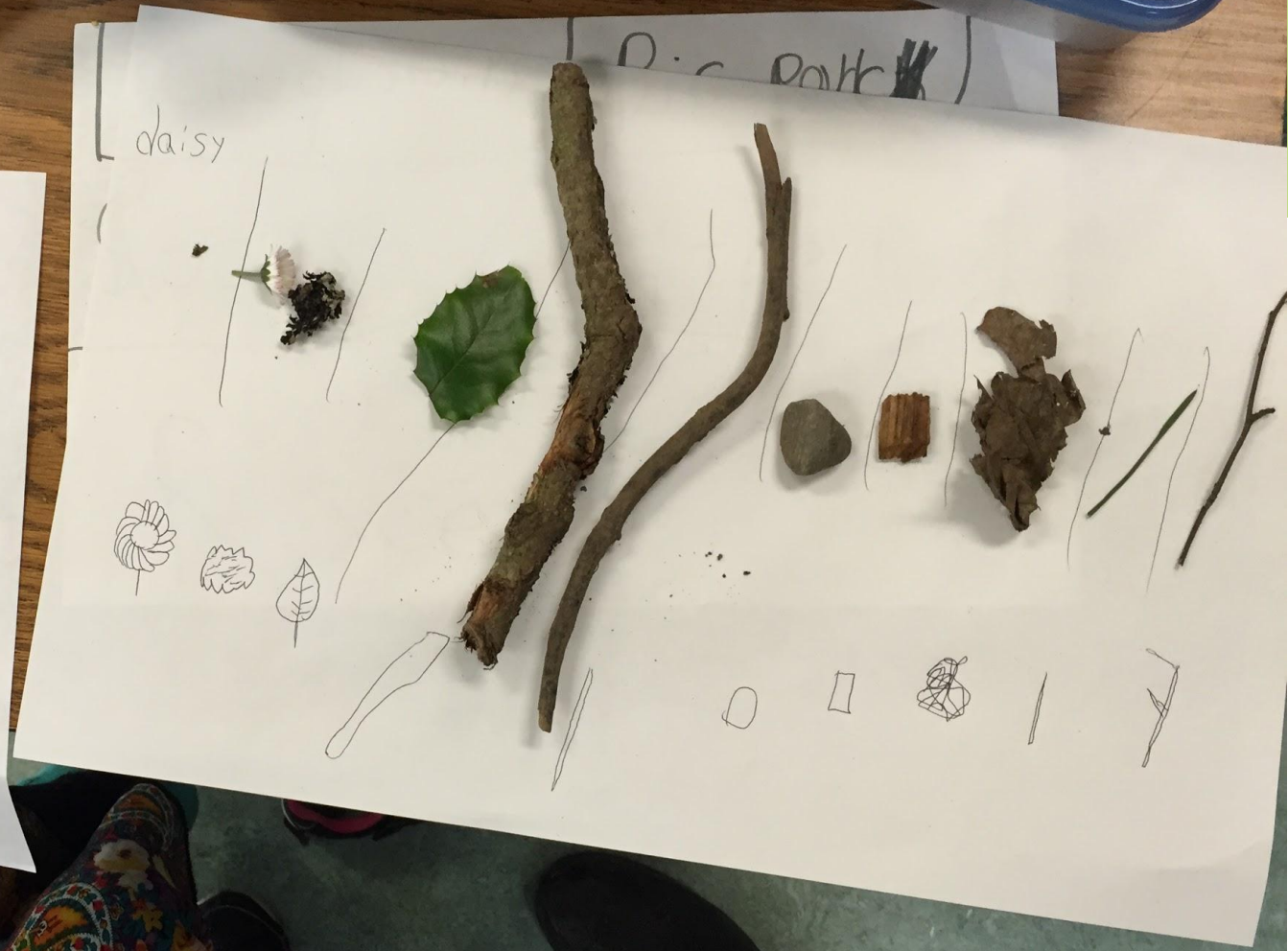


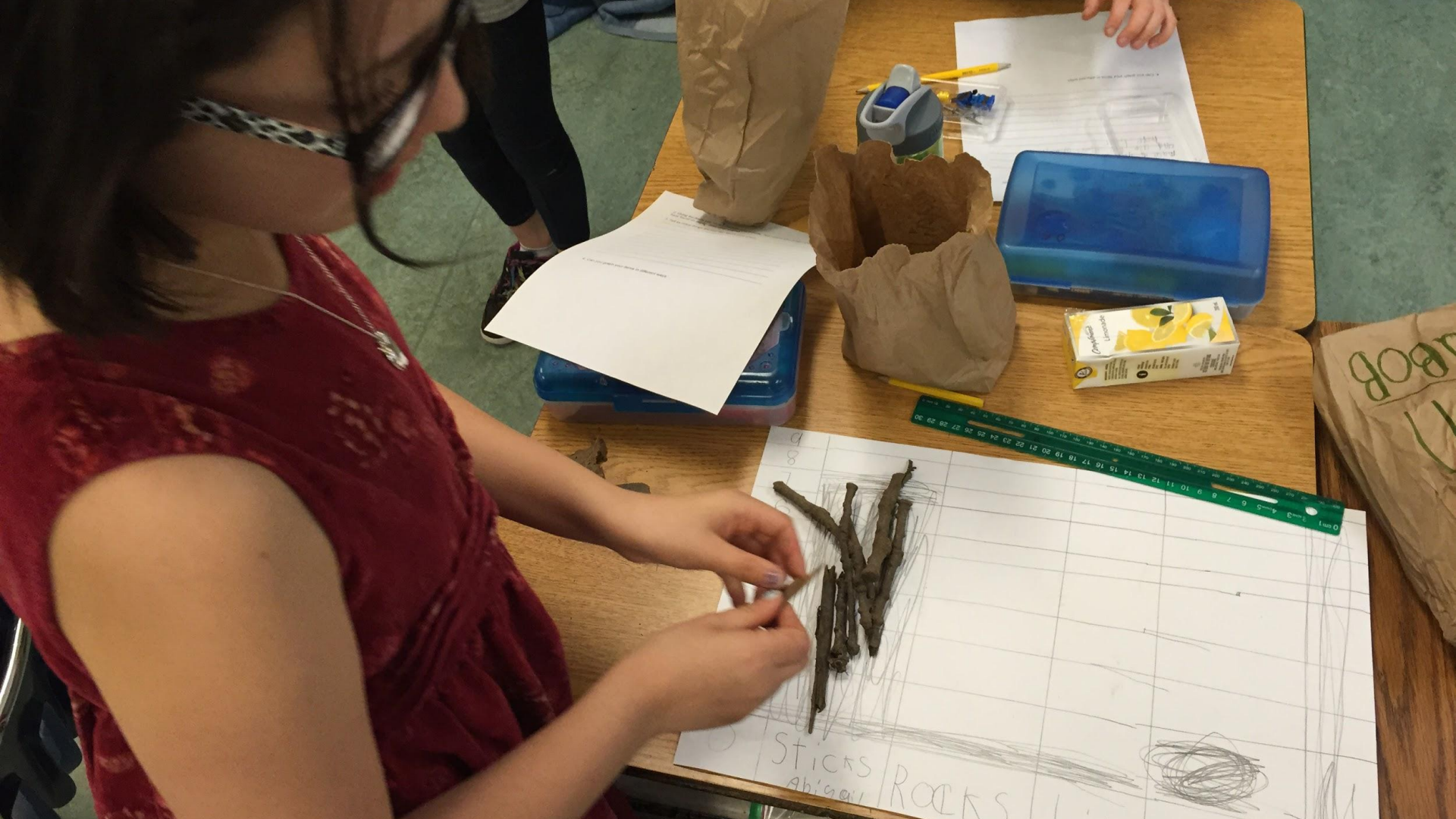
2. Using the items you have collected from outside, how would you graph what you have found on paper. (use other paper).

3. Tell as many things are you can about your graph

I Have a daisy some moss
A Leaf 2 sticks 1 Rock
a Woodchip crumbled
leaf 1 peace of grass
and a Really skinny twig

4. Can you graph your items in different ways.




Sticks
ROCKS

Baseline Assessment

BC Performance Standards Rating Scale was used to assess in March (pre) and again in May (post).

- Strategies and Approaches
- Concepts and Applications
- Accuracy
- Representation and Communication

Activities

Pre-Planting Stage:

- What they wanted to plant and favourite fruits and vegetables- tallied and graphed
- Measured and compared the perimetre of garden beds
- Planned out plantings to go in each garden box
- Prepared the soil- layering of the soil,measured and moved compost, measured and planted crop cover
- Started seedlings in classrooms

Activities

Planting Stage

- Planting of seedlings– vegetables, fruits, herbs, edible flowers
- Lifecycles
- Counted plants and graphed them
- Seed and plant spacing
- Designed and built trellises for peas
- Soil study

Activities

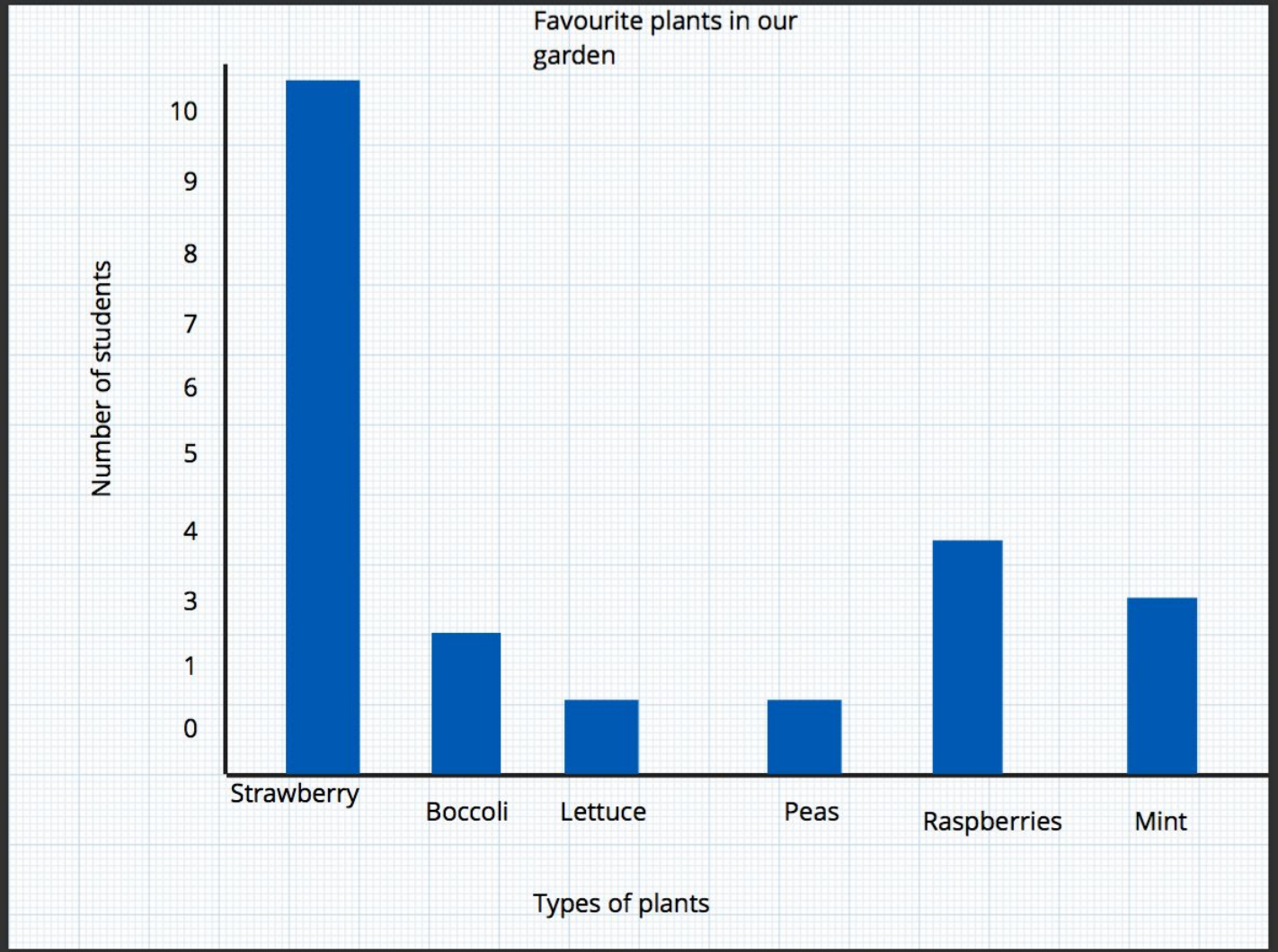
Post Planting

- Regular plant growth measurement– journaled and graphed
- Watering measurements
- Student documentation using book creator
- Butterfly release

Taking Technology Outside

AWESOME!

WOW!


Favourite plants in our garden
Number of students
10
9
8
7
6
5
4
3
1
0
Strawberry
Boccoli
Lettuce
Peas
Raspberries
Mint
Types of plants

Post Assessment Results

Overall improvements in all areas

- Strategies and Approaches
- Concepts and Applications
- Accuracy
- Representation and Communication

Class	Pre- Assessment	Post- Assessment
Gr. 3/4	**65%** were meeting expectations	**93%** were meeting expectations **31%** of those exceeding
Gr. 2/3	**42%** were meeting expecations	**100%** were meeting expectations **61%** of those exceeding
Gr. 2/3	**33%** were meeting expectation	**99%** were meeting expectations **45%** of those exceeding

Final Thoughts...

- Overall student improvement and engagement
- Student ownership and excitement over the garden (checking on the garden, naming of the area)
- Teacher collaboration
- Ripple effect among students

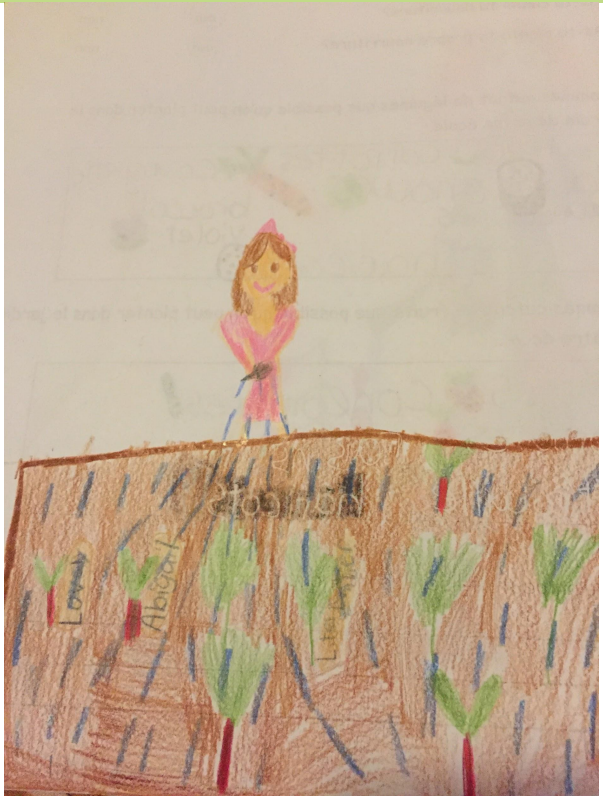

PACIFIC
COAST
SWING


POP
ART

Final Thoughts...

“It was interesting to note how the lessons in the garden expanded outwardly into the world.”

Bucklin-Sporer. A & Pringle, R.K.



Resources

- Canadian Parks Council: Connecting Canadians with Nature Report– www.parks-parcs.ca/english/cpc/publications.php
- Children and Nature Network (US) – www.childrenandnature.org
- Evergreen Canada – www.evergreen.ca
- Forest School Canada – www.forestschoolcanada.ca
- Healthy by Nature – www.healthybynature.ca
- How to Grow a School Garden– *Arden Bucklin-Sporer and Rachel Kathleen Pringle*
- Implementing Place– Based Education in the Elementary Classroom– *Rachel C. Hall*
- Last Child in the Woods– *Richard Louv*
- Place-based Education: Connecting Classrooms and the Communities– *Lane-Zucker & Sobel*
- Schoolyard-Enhanced Learning– *Herbert W. Broda*